Chronic **pancreatitis**

Reviewed by Dr Alan Ogilvie, consultant physician and gastroenterologist

What is the pancreas?

The pancreas is a soft, elongated gland situated at the back of the upper abdominal cavity behind the stomach.

It is divided into the head (through which the common bile duct runs as it enters the duodenum) and the body (which extends across the spine and the tail), which is close to the left kidney and to the spleen. Because the pancreas lies at the back of the abdominal cavity, diseases of the pancreas may be difficult to diagnose.

What does the pancreas do?

The pancreas has two main functions:

- it produces a series of enzymes which help in the digestion of food. Enzymes produced in the pancreas are important in the digestion of proteins, carbohydrates and, particularly, fats. Bicarbonate is also produced in large amounts to neutralise the acid produced by the stomach.
- it produces a series of hormones which are important in maintaining a normal level of sugar in the blood. The best known of these hormones is insulin. Insulin deficiency of this hormone results in the development of diabetes. Another hormone (glucagon) helps to raise blood sugar, and several other hormones control intestinal function.

What is pancreatitis?

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Any inflammation of the pancreas is called **pancreatitis**.

Acute **pancreatitis** results in severe inflammation of the gland and patients may be seriously unwell.

Chronic **pancreatitis** develops either as the result of repeated attacks of acute **pancreatitis** or as the result of other injuries to the pancreas (see below).

It is thought that the damage to the pancreas occurs as the result of digestive enzymes leaking into the pancreas and starting to digest it. This sets up inflammation, and when the inflammation settles, the scarring process distorts the pancreas making further attacks of inflammation likely. Thus a vicious cycle develops.

As a result of prolonged damage to the pancreas, the pancreas fails to produce enough digestive enzymes to permit adequate digestion of food. This leads to weight loss and the frequent passage of pale greasy stools which contain excess amounts of fat. Further, the destruction of the cells which produce insulin may lead to the development of diabetes.

What causes chronic pancreatitis?

The most common cause of chronic **pancreatitis** is long-term excessive alcohol consumption. There is a direct relationship between the amount of alcohol consumed and the risk of developing chronic **pancreatitis**.

Other causes include:

- high levels of calcium in the blood
- abnormalities in anatomy which are usually present at birth
- cystic fibrosis
- high blood fats (hypertriglyceridaemia)
- in rare cases, some drugs can cause **pancreatitis**
- in a number of cases no specific cause can be identified, a condition known as idiopathic **pancreatitis**.

What are the symptoms of chronic pancreatitis?

The symptoms are very variable.

Pain occurs in most patients at some stage of the disease. This may vary in intensity from mild to severe. It may last for hours or sometimes days at a time and may require strong painkillers to control it.

It often radiates through to the back and can sometimes be relieved by crouching forward. It is commonly brought on by food consumption and so patients may be afraid to eat. It is also commonly severe through the night.

The pain varies in nature, being gnawing, stabbing, aching or burning, but it tends to be constant and not to come and go in waves. It may sometimes burn itself out but can remain an ongoing problem.

The mechanism of the pain is unclear. It seems to be related to pancreatic activity since it is frequently caused by food, especially fatty or rich foods.

Some patients will have obstruction to the small ducts in the pancreas by small stones, and this is thought to cause back pressure and destruction of the pancreas. There is no relationship between the severity of the pain and the severity of the pancreatic inflammation.

The pain is often difficult to diagnose and can be mistaken for pain caused by virtually any other condition arising from the abdomen or lower chest.

It can be difficult to distinguish pain caused by **pancreatitis** from pain caused by a peptic ulcer, irritable bowel syndrome, angina pectoris, gallstones.

Diabetes is also a common symptom which affects over half of all patients with long-standing chronic **pancreatitis**.

Long-standing chronic inflammation results in scarring of the pancreas which destroys the specialised areas of the pancreas which produce insulin.

Deficiency of insulin results in diabetes. Diabetes causes thirst, frequent urination and weight loss. It may be possible in the early stages of chronic **pancreatitis** to treat the diabetes with tablets, but in the late stage of chronic **pancreatitis**, insulin injections are usually needed.

Diarrhoea occurs in just under half of patients. Normally, all the fat in food is broken down by enzymes from the pancreas and small intestine, and the fat is then absorbed in the small bowel. With a reduced level of digestive enzymes the fat is not absorbed. When the fat reaches the large intestine, it is partially broken down by the bacteria in the colon. This produces substances which irritate the colon and result in diarrhoea. The undigested fat also traps water in the faeces, resulting in pale, bulky, greasy stools which are difficult to flush away. They may make the water in the toilet look oily, smell offensive and may be associated with bad wind.

Weight loss occurs in virtually all patients with chronic **pancreatitis**. It is due to failure to absorb calories from food, and diabetes may also contribute to this. In addition, patients may be afraid to eat because eating brings on the pain. Depression is also common in chronic **pancreatitis** and this can also reduce appetite and lead to weight loss.

Jaundice (when patients develop yellow eyes and skin) occurs in about a third of patients with chronic **pancreatitis**. It is usually due to damage to the common bile duct which drains bile from the liver to the duodenum.

The common bile duct normally passes though the head of the pancreas. In long-standing chronic **pancreatitis**, the scarring in the head of the pancreas narrows the common bile duct.

Some degree of narrowing may occur in up to half the patients with chronic **pancreatitis** but when the narrowing is severe, it prevents the bile draining from the liver into the duodenum. It then spills back into the blood and the patient's eyes and skin become yellow. In addition, the stools become paler (since bile makes the stools brown) and the urine becomes dark (because it contains more bile than normal).

Vomiting after meals is a less common symptom but can occur as a result of severe pain. It may also be due to

duodenal ulceration, which is often connected with chronic **pancreatitis**. In rare cases, the duodenum may be narrowed as a result of scarring secondary to chronic **pancreatitis**.

Vitamin and mineral deficiency. Prolonged passage of stools containing fat can result in low levels of calcium and magnesium in the blood. In addition, some vitamins may not be absorbed properly. This includes vitamins D and A.

How is pancreatitis diagnosed?

Chronic **pancreatitis** often causes no symptoms and may be discovered by accident during the course of investigation of symptoms not related to **pancreatitis**. For example, calcification in the pancreas may be seen on an X-ray of the abdomen performed for other reasons.

If your doctor suspects that you have chronic **pancreatitis**, then the first examination is likely to be an ultrasound scan of the abdomen. More detailed examinations include a CT scan of the abdomen, an MRI scan of the abdomen, ERCP and - very rarely - analysis of the composition of the juice secreted into the duodenum by the pancreas.

Ultrasound examination of the abdomen

This type of examination is identical to that performed in pregnant women to assess the growth of the baby. It uses a transponder to generate high-frequency sound waves that bounce back from the deep tissues and are detected by the transponder (transmitter and responder). It is a very safe technique and is widely used. It is performed by smearing some jelly over the upper abdomen and then moving the transponder across the skin of the upper abdomen.

However, because the pancreas lies at the back of the abdominal cavity and, therefore, a long way from the transponder, images of the pancreas may be difficult to obtain. Sometimes the problem is obesity, sometimes the pancreas is obscured by air within the intestines.

Even if the result of the ultrasound examination is normal, this does not rule out the possibility of chronic **pancreatitis**.

Abdominal CT scanning

A CT scan is a very sophisticated X-ray in which the patient lies on a table which is moved through an X-ray tube. The information thus obtained is then analysed by a powerful computer which then produces 'slices' though the abdomen. This technique is more reliable in imaging the pancreas than abdominal ultrasound.

However, a normal CT scan does not exclude a diagnosis of chronic **pancreatitis**.

Abdominal MRI scanning

MRI scanning is a newer technique of examining abdominal organs. It does not involve X-rays.

The patient is passed though a large and powerful magnet which energises molecules in the tissues. Radio pulses are then generated to create a signal that is analysed by powerful computers. It is harmless, does not involve X-rays, but is very noisy.

Abdominal MRI is currently under evaluation with regard to

the accuracy of diagnosis of pancreatic disease. It is currently less widely available in the UK than CT scanning.

ERCP

ERCP (endoscopic retrograde cholangiopancreatography) is a procedure whereby X-ray contrast material is injected into the bile duct and pancreatic duct to allow X-ray pictures to be taken of these ducts.

Under sedation, an endoscope is passed into the duodenum, a small cannula (a very small tube) is inserted into the pancreatic duct and X-ray contrast is injected. X-rays are then taken.

This is currently regarded as the 'gold standard' for the diagnosis of chronic **pancreatitis**. At present, it is the only method by which minor changes (minimal change **pancreatitis**) can be reliably demonstrated.

Abnormalities which range from minor changes in side branches of the pancreatic duct to major changes in the main pancreatic duct can be identified by this method. It is sometimes possible to remove stones from the pancreatic duct.

However, ERCP is not routinely used as the first line of investigation in suspected **pancreatitis** because it requires a high degree of endoscopic expertise. There is also a very real risk of inducing a further attack of **pancreatitis** in the patient as a result of the irritant effect of the X-ray contrast within the duodenum.

Analysis of pancreatic juice

This was widely used before the advent of CT scanning and ERCP. The idea is that analysis of the pancreatic juice within the duodenum would identify pancreatic failure. However, the function of the pancreas has to be severely impaired for the test to be abnormal. In the UK this test is rarely performed outside of research centres.

Endoscopic ultrasound scan (EUS)

This is a special ultrasound investigation in which the ultrasound transponder is mounted on an endoscope. This technique is not widely available and is not as sensitive as ERCP at detecting minor degrees of chronic **pancreatitis**.

Abdominal X-ray

This may sometimes show calcification of the pancreas in chronic **pancreatitis**. This tends to occur late in the natural history of the disease and therefore, usually after the diagnosis has already been made. If the diagnosis has not already been made, then further tests are unnecessary.

Is chronic pancreatitis dangerous?

The major problem with chronic **pancreatitis** is pain control. This may require the use of morphine-like drugs (pethidine, morphine (eg MST continus) and diamorphine). There is always the risk of addiction to these drugs, particularly if their use is not controlled.

Chronic **pancreatitis** is associated with a reduction in life expectancy. Only half of the patients with a diagnosis of chronic **pancreatitis** will survive for longer than seven years following diagnosis. There is also an increased rate of cancer

of the pancreas in patients with chronic **pancreatitis** and this accounts for a fifth of the deaths. Other causes of death include complications of diabetes and complications of alcoholism.

How is chronic pancreatitis treated?

There is no **cure** for chronic **pancreatitis**. Once the pancreas is damaged, then it is not able to return to normal function and there is always the potential for further attacks. Treatment is, therefore, directed towards preventing attacks, controlling the pain and treating the complications.

Preventing symptoms worsening

Patients with chronic **pancreatitis** should avoid alcohol altogether. If the **pancreatitis** is due to excess alcohol consumption, then this is essential. If it is due to other causes, then it seems sensible to avoid a substance which is capable of damaging the pancreas.

If an underlying cause has been identified then this should be treated. Disorders of calcium metabolism and of fat metabolism will be treated appropriately. Your doctor may recommend removal of the gall bladder if **pancreatitis** is thought to be caused by gall stones.

Preventing attacks

The long-standing principle has been to try and rest the pancreas. This involves giving pancreatic supplements such as Creon (which contain pancreatic enzymes in high concentration) together with drugs which reduce acid secretion by the stomach. Patients should also follow a low-fat diet.

These measures reduce the presence of fat in the duodenum, reduce acid in the duodenum and reduce the need for pancreatic enzyme secretion. These measures are very successful in about a third of patients, moderately successful in a third and unhelpful in a third.

Some eminent specialists have supported the use of antioxidants in the treatment of chronic **pancreatitis**. These antioxidants include selenium and vitamin C. You should take specialist advice (via your GP) before taking them.

Control of pain

This is a very important aspect of the treatment of chronic **pancreatitis**. Pancreatic pain varies in severity from mild (controllable with simple analgesics such as paracetamol (eg Panadol)) to severe (requiring morphine-like drugs for control).

In addition to the preventive measures listed above, the basic principle is to use the drug lowest down the analgesic ladder which controls the pain. Since the pain is often worse at night and since both body and mind are at their lowest ebb in the early hours of the morning, the lowest rung of the analgesic ladder may be pethidine or morphine (eg MST continus tablets). Since the pain is chronic and severe, there is a fine line between adequate analgesia and addiction.

Pain management often needs specialist help either from the specialist gastroenterologist or from the local pain clinic. Your GP will help with appropriate referral, although in most cases the diagnosis of chronic **pancreatitis** will have been made by

a hospital specialist, who will probably supervise your ongoing care.

Other medications may also help. Antidepressants may reduce the requirement for painkillers and may enable a patient to descend the 'analgesic ladder'. Other measures include the injection of local anaesthetic or other substance into the nerve supply from the pancreas.

Treatment of the complications

Malabsorption is treated by administering pancreatic supplements in capsule or powder form.

Diabetes is treated either by tablets or, more commonly, insulin.

Jaundice is treated by ERCP and stent insertion across the stricture in the common bile duct where it passes though the head of the pancreas.

Surgery for chronic pancreatitis

In rare cases, it may be necessary to consider surgery as a treatment of chronic **pancreatitis**. The indication for surgery is usually severe pain unresponsive to standard measures or a high level of morphine or similar drug usage in a young person.

The surgery may involve measures to improve drainage of the pancreatic duct, partial or complete removal of the pancreas. The major problem with removal of all or part of the pancreas is that it could lead to the development of diabetes in those patients who don't already have it.

Based on a text by Dr Torben Nathan, Dr Carl J. Brandt and Dr Ove B. Schaffalitzky de Muckadell, professor in internal medicine

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Treatment of Pancreatitis at Mayo Clinic

Mayo specialists each year treat more than 2,000 patients for **pancreatitis**, a painful inflammation of the pancreas that can have serious consequences. Mayo Clinic is known for its state-of-the-art diagnostics and treatment for acute and chronic **pancreatitis**. A team of specialists, usually a gastroenterologist, surgeon and an endoscopy specialist, work together to give patients comprehensive and compassionate care. Mayo researchers have studied pancreatic disease extensively and have written numerous journal articles on this subject. (See articles under Research.)

Diagnosis

Symptoms of acute **pancreatitis** include nausea, upper abdominal pain and fever. Symptoms of chronic **pancreatitis** include pain after eating and, if advanced, diabetes mellitus and diarrhea fror digestive failure. Diagnostic tests for **pancreatitis** include blood tests, ultrasound and CT scans, as well as endoscopic tests and pancreatic function tests. These tests help physicians determine if surgery or endoscopic therapy is necessary. Read more about diagnosis of **pancreatitis**.

Treatment Options

Acute **pancreatitis** usually requires hospital treatment. The main goals of treatment for chronic **pancreatitis** are to stop alcohol intake (if alcohol is the cause), control pain and improve malabsorption problems. Surgery may be needed for cysts resulting from chronic **pancreatitis** or i severe cases of acute **pancreatitis** in which pancreas tissue dies. Complications of **pancreatitis** a often managed with endoscope procedures. Read more about **pancreatitis** treatment.

→ **Treatment in Jacksonville, Fla.**

→ **Treatment in Rochester, Minn.**
Treatment of Children & Adolescents

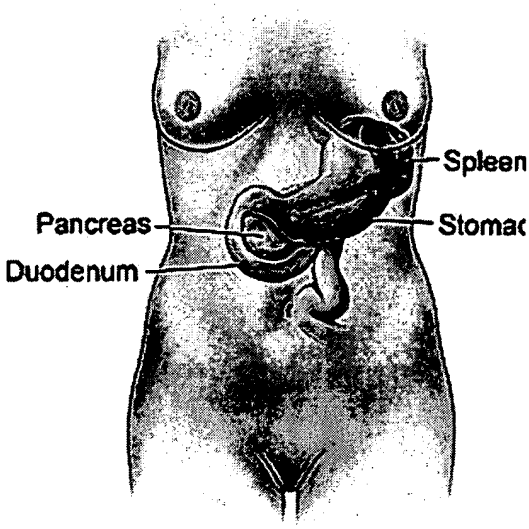
→ **Treatment in Scottsdale/Phoenix, Ariz.**

About Pancreatitis

The pancreas is a long, flat gland tucked behind the stomach between the upper part of the small intestine (duodenum) and the spleen.

Pancreatitis causes painful inflammation in the abdomen that often feels as if pain goes through

the upper abdomen (below the breastbone) and into the back. It occurs when digestive enzymes, instead of breaking down food in the small intestine, attack the pancreas, affecting digestion and the hormones that help control blood sugar levels.



Pancreatitis has two main types:

Acute pancreatitis is marked by sudden abdominal pain and possibly nausea, vomiting and high fever. Approximately 85 percent of acute **pancreatitis** cases are mild, but in severe cases, prolonged hospitalization is required and surgical or endoscopic treatment may be needed as a lifesaving intervention. In many cases, gallstones trigger acute attacks -- or they are brought on by alcoholism.

Chronic pancreatitis develops slowly, often over years. The disease can be less obvious in its ear stages and the symptoms difficult to recognize. Pain can be persistent. Patients may also experienc nausea, difficulty with eating, and weight loss. The main goals of treatment are pain control and enzyme therapy for malabsorption problems. Since the primary cause of chronic **pancreatitis** is heavy alcohol use, complete abstinence from alcohol can lessen pain and slow the destruction of th disease. An important type of chronic **pancreatitis** is idiopathic, meaning **no** identifiable cause is found. Chronic **pancreatitis** implies an irreversible scarring, which can lead to irreparable pancrea failure with digestive problems and diabetes.

Hereditary pancreatitis is considered a type of chronic **pancreatitis** -- caused by a rare genetic condition initially distinguished by repeated, acute **pancreatitis** attacks.

Read more at
www.MayoClinic.com (opens in new window)
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Patients and medical professionals may call 1-800-533-UPMC (8762) for more information.

GENE FOR HEREDITARY PANCREATITIS IDENTIFIED BY UPMC RESEARCHERS

PITTSBURGH, Oct. 1, 1996 — Researchers from the University of Pittsburgh Medical Center (UPMC) announced they have identified the gene for hereditary **pancreatitis**, a rare disease that causes excruciating abdominal pain and serious medical complications as the pancreas literally digests itself. With the gene, the research team can now work to develop therapies for this disease, for which there is currently **no** treatment. Details of their study of five families, including one from Kentucky for whom its surname, Slone, has become synonymous with the condition, are in the Oct. 1 issue of *Nature Genetics*.

The cooperation of family members, many of whom convened special get-togethers to facilitate the collection of blood samples, was key to identifying the gene, say lead researchers Garth Ehrlich, Ph.D., and David Whitcomb, M.D., Ph.D. Drs. Ehrlich and Whitcomb and their collaborators from five other universities found those family members affected by the disease have a mutation of a gene that codes for trypsin, the major enzyme that digests proteins in food. Because trypsin is so potent, the pancreas manufactures it in a form called trypsinogen that normally remains inactive until it is secreted into the intestine after a meal. If trypsin inadvertently becomes active in the pancreas, the body employs an important safe-guard mechanism that destroys the trypsin and prevents the pancreas from being digested by its own product.

In hereditary **pancreatitis**, this self-destruct mechanism is missing. Patients with this disease produce trypsin that lacks what is called a cleavage site, the place where the enzyme could be chopped in half and made inactive by another enzyme. In this indestructible form, trypsin still digests proteins but begins to digest the pancreas, piece by piece, as well.

"The mutation of the trypsinogen gene helps us to understand the molecular basis of hereditary **pancreatitis** and provides insight into nonhereditary forms of the disease as well," said Dr. Ehrlich, associate professor of pathology and otolaryngology at the UPMC and executive director of the Center for Genomic Sciences at the University of Pittsburgh, where this study's laboratory work was performed.

"Trypsin is much like Pac-Man, eating away at protein. But in patients with hereditary **pancreatitis**, there is never Game Over.' There is **no** fail-safe mechanism -- **no** ghost' -- that can stop the Pac-Man before it devours the pancreas," explained Dr. Whitcomb, assistant professor of medicine in the division of gastroenterology and hepatology at the UPMC.

Hereditary **pancreatitis** typically begins between the ages of five and 10 with an acute attack of abdominal pain. After repeated attacks and scarring of the pancreas, a chronic condition develops characterized by constant pain, nausea and vomiting, as well as by weight loss due to malabsorption of food. It often leads to severe complications, including diabetes and pancreatic cancer, which occurs at a rate of more than 50 times higher than in the general population. There is **no** treatment for hereditary **pancreatitis**.

"Now that the disease gene is known, individuals who carry the gene can be identified before **pancreatitis** begins. And perhaps, more importantly, we can now design strategies for preventing or controlling the development of the disease," said Dr. Whitcomb.

The authors add that their findings have clinical relevance for other, more common forms of **pancreatitis**, including those caused by alcohol consumption and diets rich in fatty foods. These forms of **pancreatitis** are diagnosed in about 40,000 Americans each year.

Their work was supported by the Center for Genomic Sciences at the University of Pittsburgh; the Midwest Multicenter Pancreatic Study Group, which is comprised of the University of Pittsburgh, the University of Cincinnati and the University of Kentucky Medical Center in Lexington; and the National Institutes of Health.

In addition to Drs. Whitcomb and Ehrlich, other authors are: Michael C. Gorry; Robert A. Preston; William Furey; Michael J. Sossenheimer; Charles D. Ulrich; Stephen P. Martin; Lawrence K. Gates, Jr.; Stephen T. Amann; Phillip P. Toskes; Roger Liddle; Kevin McGrath; G. Uomo; and J.C. Post.

For more information, please see Genetics and Gene Therapy Archives

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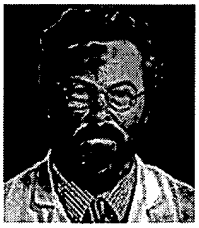
Ask the Experts about General Gastroenterology
From Medscape Gastroenterology

Approach to the Management of Acute Recurrent Idiopathic **Pancreatitis**?

Question

What is the recommended approach to the management of acute recurrent idiopathic **pancreatitis**? The patient has had biliary sphincterotomy and cholecystectomy without benefit. Endoscopic ultrasound examination of the pancreas was normal, and results of magnetic resonance cholangiopancreatography (MRCP) were also normal. The latest episode of **pancreatitis** was quite severe. Do you recommend genetic/autoimmune testing?



Response from John Baillie, MD, MB, ChB, FRCP
Professor, Wake Forest University Medical Center and Health Sciences, Winston-Salem, North Carolina; Director, Hepatobiliary and Pancreatic Disorders Service, Baptist Medical Center, Winston-Salem, North Carolina

This is a difficult question to answer because the work-up of idiopathic acute recurrent **pancreatitis** (IARP) has to be tailored to the individual patient. Cholecystectomy and biliary sphincterotomy *almost* completely remove gallstones/biliary sludge from the differential diagnosis. This physician indicates "almost," because I have seen 3 patients (in > 20 years) who must have had duplicate gallbladders (a 1-in-a-million occurrence), the second one undetected at surgery, thus persisting and developing stones after the first was removed. Occasionally, a small biliary sphincterotomy proves inadequate to ablate the sphincter muscle. If in doubt, repeat endoscopic retrograde cholangiopancreatography (ERCP) ± manometry will lay this concern to rest. Let us assume that

the IARP is not biliary in origin. An ampullary tumor can cause **pancreatitis**, but a lesion of this nature should have been detected at ERCP or during endoscopic ultrasound (EUS) exam. Normal EUS and MRCP largely exclude mechanical causes of **pancreatitis**, such as strictures, stones, cysts, and solid masses. Although these imaging techniques are said to have high sensitivity and specificity for diagnosing pancreas divisum, ERCP remains the gold standard for identifying this potentially remediable cause of **pancreatitis**. Minor papillotomy is curative in 80%-90% of cases of pancreas divisum with IARP (and **no** other definable cause). "Small print" causes of IARP should be considered, including drug reaction (any "new" medications that seem temporally related?), hypercalcemia, and hypertriglyceridemia.

Autoimmune **pancreatitis** should also be considered, especially if the patient has any other "rheumatologic" condition(s). Pancreatic fullness on computed tomography (CT), a fine irregularity of the pancreatic duct without strictures or dilatation at ERCP, elevated serum IgG subclass 4, serologic indicators of sicca syndrome, and high sedimentation rate are all clues to this often subtle diagnosis. Autoimmune **pancreatitis** is a diagnosis worth making, because it is potentially treatable with steroids.

This physician finds genetic screening in IARP problematic because it is not clear what to do with the results. Numerous mutations of the cystic fibrosis transmembrane regulator (CFTR) gene are described. One mutant allele will not be manifest as overt cystic fibrosis, but there are data suggesting a predisposition to IARP. The cationic trypsinogen gene defect is autosomal dominant, with about 80% penetrance -- so the effects of one abnormal gene are more "potent" than a CFTR mutation. At present, there is **no cure** for genetically based **pancreatitis**. Also, patients may be concerned whether insurers will learn about an abnormal genetic test and decline to cover them. There are numerous abnormal CFTR genes that can be identified, but only a few appear to be linked to **pancreatitis**. Patients being considered for genetic screening should see a genetic counselor first, as the sequelae of abnormal results (eg, raising questions about paternity) may be more than the gastroenterologist should address.

The patient's age was not provided in the scenario presented. IARP is a not uncommon presentation of pancreatic adenocarcinoma. All such tumors arise from the pancreatic ductal epithelium. The patient may have attacks of **pancreatitis** for months or even years before cross-sectional imaging identifies a mass. A negative EUS result is reassuring, but it is appropriate to repeat this or other imaging (CT, MRCP) studies periodically (eg, after 3-6 months) in the hope of detecting some interval change. Serologic markers of pancreatic malignancy -- such as carbohydrate antigen (CA)19-9 and carcinoembryonic antigen (CEA) -- are fairly sensitive at high levels (eg, >1000 U/mL) but lack specificity. A patient with IARP and a CA19-9 of 10,000 should be followed closely for the development of a pancreatic mass. Finally, empiric therapy with antioxidants (eg, vitamins C and E, selenium) has been recommended in persistent IARP. Although in this physician's experience that latter is not very helpful, it can't do any harm, provided that the vitamin E intake does not exceed 400 IU daily.

Posted 04/12/2006

Suggested Readings

- Baillie J. Idiopathic recurrent **pancreatitis**: the ERCP Luddites are at the door. Am J Gastroenterol. 2000;95:1615-1618.
- Baillie J. What should be done with idiopathic recurrent acute **pancreatitis** that remains idiopathic after standard investigation? JOP (Journal of the Pancreas). 2001;2:401-406.
- Mitchell RM, Byrne MF, Baillie J. **Pancreatitis**. Lancet. 2003;361:1447-1455.

Disclosure: John Baillie, MD, MB, ChB, FRCP, has disclosed that he has served as a consultant to GlaxoSmithKline and CONMED. Dr. Baillie has also disclosed that he has received clinical research grant support from Pentax Instruments. Dr. Baillie has also disclosed that he serves on the speakers' bureau of AstraZeneca.

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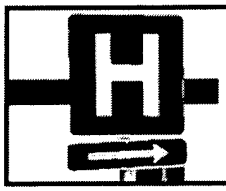

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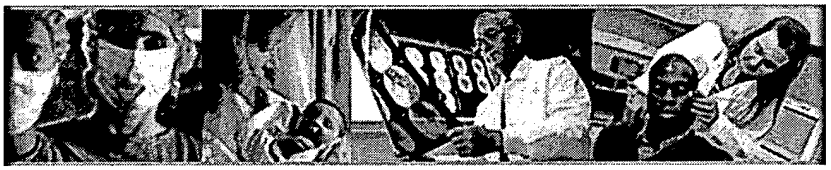

Chronic Pancreatitis

What is chronic pancreatitis?

Chronic **pancreatitis** is an ongoing or repeated inflammation of the pancreas.

The pancreas is an organ located behind the stomach. It produces digestive enzymes and insulin. The digestive enzymes flow into the small intestine to help break down food. Insulin is released into the blood to control the level of sugar (glucose) in the blood.

Pancreatitis can be acute or chronic. Acute **pancreatitis** occurs as one sudden episode. After acute **pancreatitis** the pancreas usually returns to its normal condition. Chronic **pancreatitis** means ongoing or repeated bouts of **pancreatitis** in which there is permanent damage to the pancreas. The damaged pancreas gradually becomes unable to produce normal digestive enzymes and insulin.

How does it occur?

Chronic **pancreatitis** may result from:

- drinking too much alcohol (the most common cause)
- gallstones, which block the normal flow of pancreatic secretions into the intestines

- too much fat in the blood.

In rare cases **pancreatitis** is inherited.

What are the symptoms?

The main symptoms of chronic **pancreatitis** are:

- severe pain in the stomach area that extends to the back
- vomiting.

The pain is usually a constant, dull pain that gets worse when you eat food or drink alcohol. The pain may lessen when you sit up and lean forward. As the disease gets worse, attacks of pain last longer and happen more often. Attacks may last a few hours or as long as several weeks.

Weight loss is another common symptom.

As the pancreas becomes damaged, it produces fewer digestive enzymes for the intestines. As a result, food is poorly absorbed. Bowel movements become frequent and foul smelling.

If the pancreas is unable to produce the hormone insulin, diabetes may develop, causing these symptoms:

- increased thirst
- increased appetite
- increased urination
- fatigue
- weight loss.

How is it diagnosed?

Your health care provider will ask about your medical history, particularly about how much alcohol you drink and whether you have had gallstones. Your provider will ask about your symptoms and examine you.

You may have the following tests:

- blood tests, especially to check your blood sugar, amylase, and lipase levels (amylase and lipase are enzymes made by the pancreas)
- urine tests
- x-rays of your abdomen and chest
- ultrasound exam of the pancreas and gallbladder
- CT scan of the pancreas
- ERCP, a way of looking at your pancreas through a slim flexible tube (endoscope) that is passed through your mouth and stomach to where your pancreas and intestines are connected
- biopsy, an exam of tissue removed from the pancreas, usually through the endoscope.

How is it treated?

The goals of treatment are:

- to control the pain

- to prevent further damage to the pancreas
- to prevent further attacks of **pancreatitis**.

You will need:

- pain medicine
- a diet of foods that are easy to digest
- lots of fluids
- medicine for nausea and vomiting.

If your **pancreatitis** is severe, you may need to not eat or drink for a few days. In this case you will stay in the hospital so you can be given fluids through your veins (IV).

You may need insulin to control your blood sugar if the pancreas is not producing enough insulin. You may also need enzyme pills to replace the digestive enzymes that the pancreas may not be able to make or get into the intestine because of swelling.

In some cases your health care provider may recommend surgery to help relieve pain or to help the pancreas work better.

If you have alcoholic **pancreatitis**, **no** treatment will prevent **pancreatitis** or relieve your pain if you continue to drink alcohol.

How long will the effects last?

As with any chronic disease, the effects may last for months or years. If you avoid alcohol completely, follow your diet, and take the medicine prescribed by your health care provider, your chances for improvement are good.

If your **pancreatitis** is caused by gallbladder disease or high blood fats, treating these problems will make future attacks of **pancreatitis** less likely.

How can I take care of myself?

The most important thing to do is stop drinking all kinds of alcohol. Also follow the diet and take the medicines your health care provider prescribes to help your pancreas heal.

How can I help prevent chronic pancreatitis?

If you drink heavily, get help for stopping. Talk to your health care provider about referral to an alcohol treatment center or a group like Alcoholics Anonymous.

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